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09/291,426 04/13/99 JAMES

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EXAMINER

HM12/1026

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ART UNIT	PAPER NUMBER

1627

DATE MAILED:

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

file copy

Office Action Summary

Application No.
09/291,426

Applicant(s)
James et al.

Examiner
Bennett Celsa

Art Unit
1627



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Aug 10, 2001
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above, claim(s) 4, 6-8, 11-13, 15, 16, 22, 25, and 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 9, 10, 14, 17-21, 23, 24, 26, and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

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DETAILED ACTION

Response to Amendment

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Status of the Claims

Claims 1-28 are pending.

Claims 4, 6-8, 11-13, 15, 16, 22, 25 and 28 are withdrawn from consideration as being directed to a nonelected invention.

Claims 1-3, 5, 9, 10, 14, 17-21, 23, 24, 26 and 27 are under consideration

Election/Restriction

2. This application contains claims 4, 6-8, 11-13, 15, 16, 22, 25 and 28 drawn to an invention nonelected without traverse. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Withdrawn Objection (s) and/or Rejection (s)

Applicant's amendment of the specification (e.g. pages 6 and 7) has overcome the objection relating to incomplete drawings of chemical structures.

Applicant's amendment and arguments have overcome the indefinite rejection under 35 USC 112, second paragraph of claims 1, 3 and 10.

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Outstanding Objection(s) and/or Rejection (s)

3. The scope enablement rejection under 35 USC 112, first paragraph of claims 1-3, 5, 9, 10, 14, 17-21, 23, 24, 26 and 27.

Discussion

Applicant's arguments directed to the enablement rejection of record were considered but deemed nonpersuasive for the following reasons.

Applicant argues that the "polymer libraries of the present invention *can be* constructed from any combination of A-type and B-type monomers known to react together to form copolymers" and "Libraries of terpolymers and higher can be constructed by introducing third and higher monomer series having polymerizable functional groups that are reactive with the polymerizable functional groups of the first and second monomer series." Applicant then argues that the examples (e.g. drawn to di-hydroxy compounds in general and diphenols particularly) are illustrative; and that "One of ordinary skill in the art readily understands how to prepare a polyester from diol and dicarboxylic acid".

However, applicant's arguments are clearly not addressing the CLAIMED invention; and applicant's argument fails to appreciate the crux of the enablement rejection which questions the ability of the disclosed invention to provide sufficient support to enable one of ordinary skill in the art to practice (e.g. **MAKE and USE**) the invention over the entire scope of the presently claimed invention.

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The CLAIMED scope of copolymer (e.g. A-B) and polymer (e.g. A-B-C, A-B-C-D, A-B-C-D-E on to infinity) libraries lacks metes and bounds as to the resulting polymer compound (CORE) structure; since :

- a. each of the individual monomers (e.g. A,B,C) is varied (one or more times) as to monomer "core" structure (e.g. keeping constant the "polymerizable functional groups"),
- b. in a COMPLETELY OPEN ENDED manner as defined by the term "homologous series" (e.g. see specification page 5) which incorporates ONE OR MORE variations in "substituents" or internal monomer core structure.
- c. Additionally, the co-polymer and polymer libraries can be "further modified" by "chemical reactions or crosslinking" (e.g. see claims 9 and 27) without indication as to what types of "chemical reactions" and/or "crosslinking" is encompassed.

With regard to designing core monomer structure which will predictably result in potentially useful library compounds , there is a complete lack of specification guidance outside of the specifically disclosed embodiments. The specification merely makes vague assertions (e.g. see specification page 5) as to the need for one "To obtain a library of polymers where selected end-use properties change in a predictable and systematic fashion".

With respect to the adequacy of disclosure that a claimed genus possesses an asserted utility, *representative examples* together with a statement applicable to the genus as a whole will ordinarily be sufficient if it would be deemed likely by one skilled in the art, in view of contemporary knowledge in the art, that the claimed genus would possess the *asserted utility*. In

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re Oppenauer, 31 CCPA 1248, 143 F.2d 974, 62 USPQ 297; In re Cavallito et al., 48 CCPA 711, 282 F. 2d 357, 127 USPQ 202.

However, in light of the complete lack of any guidance as to BOTH the requisite monomer core structure and the resulting utility, it is clear in the present case that specifically disclosed embodiments are not “commensurate” in scope to claims which encompass polymer and copolymer libraries which are totally nondescriptive as to the resulting core structure and/or resulting properties.

In other words, the Examiner is simply asserting that applicant has failed to provide sufficient representative examples to enable the skilled artisan to practice (MAKE and USE) the claimed invention e.g. the *quid pro quo* for obtaining a patent. Disclosing non-specific categories (e.g. without any core structure) of monomer compounds and screening techniques without providing guidance regarding compound structure and/or resulting screen able utility is an open invitation to experiment; e.g. the proverbial hunting licence.

Applicant further argues that the Examiner by making an enablement rejection is unfairly not acknowledging that the claimed polymer libraries may be constructed from homologous series of monomer types known to react to form copolymers. In this respect applicant refers to the obviousness rejection of the claims over the Kohn, Gordon and Still references and argues that the obviousness rejection is somehow inconsistent with the making of an enablement rejection.

However, applicant’s argument is not convincing since the above enablement rejection is a *scope rejection*, which indicates, that a portion of applicant’s invention is indeed enabled by the

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specification, but points out that a much larger portion of the claimed invention is non-enabled. Accordingly, in this respect an enablement rejection for scope is not internally or legally inconsistent with a finding that enabled embodiments are indeed either anticipated or rendered obvious by prior art.

Accordingly, for the reasons recited in the rejection and in light of the discussion above, the nonenablement rejection is hereby retained.

4. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 19 is vague and indefinite as to the term "random and block polymers and copolymers thereof", as the metes and bounds of the aforementioned claim cannot be determined as the specification, claims and art do not recognize what constitutes "random and block polymers and copolymers thereof" as referring to the list of monomers as defined in the claim. Applicant's are requested to point to support for the aforementioned term and clarification is requested.

Discussion

Applicant's response to the above indefinite rejection was considered but deemed nonpersuasive for the following reason.

In response to the above rejection applicant refers to specification page 9, lines 24-27 and argues that it is "conventional" to incorporate one, two, three or more alkylene oxides into

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polymers “by randomly introducing individual alkylene oxide units, or by copolymerizing blocks of alkylene oxides.

Initially, it is noted that the specification page 9 referred to by applicant is specifically directed to the same list of recited alkylene oxides as found in claim 19 with the ultimate member of the “markush” being recited as “block and random copolymer segments thereof” which is not entirely consistent with the claim recitation of “random and block polymers and copolymers thereof”.

In any event applicant’s argument regarding the conventionality of incorporating one or more alkylene oxides “randomly” into polymers fails to address the crux of the above rejection e.g. that there is NO metes and bounds to the resulting chemical structure that can be attributed to applicant’s “conventional” description of alkylene oxide monomer incorporation. Without a description of the ultimate structure one of ordinary skill in the art would not know what would or would not infringe. Secondly, applicant’s argument that the “random” polymer incorporation of alkylene oxide monomers into polymers clearly renders the “random and block polymers and copolymers thereof” results in the claim being indefinite since applicant’s definition constitutes the presence of an improper Markush member since once incorporated into the polymer the alkylene oxide monomers are no longer monomers ; and thus are improper Markush members.

Accordingly, the above indefinite rejection is hereby retained. .

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5. Claims 1-3, 5, 9-10, 14, 17-21, 23-24 and 26-27 are rejected under 35 USC 103 for obviousness over Kohn 5,216,115, Gordon et al., J.Med. Chem. Vol. 37 No.10 pages 1385-1401 and Still et al. US 5,565,324.

6. Claims 1-3, 5, 9-10, 14, 17-21, 24 and 27 are rejected under 35 USC 103 for obviousness over Kohn 4,980,449, Gordon et al., J.Med. Chem. Vol. 37 No.10 pages 1385-1401 and Still et al. US 5,565,324.

Discussion

Applicant's arguments directed to the above obviousness rejection were considered but deemed nonpersuasive for the following reasons.

Initially, it is noted that the substance of the above obviousness rejections as recited in the prior office action are hereby incorporated by reference in their entirety. Additionally, in response to applicant's newly amended claims, it is further noted that both of the above rejections are further modified to incorporate the following:

It is noted that the Still '324 reference teaches that combinatorial syntheses can be performed, at the option of the practitioner, as a matter of design choice, in either the same vessel or in different vessels (e.g. separate syntheses e.g. an array format): " In carrying out the syntheses ... One can use microtiter well plates, individual containers, columns, gels, Terasaki plates, flasks, Merifield syntheses vessels, etc. (E.g. see col. 15, lines 7-20: see also col. 15, lines 32-col. 16, line 21). Accordingly, making the library in one vessel or in separate vessels is an obvious design choice to one of ordinary skill in the art at the time of applicant's invention.

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In response to the above obviousness rejections applicant argues that the Gordon et al. and/or Still et al. references “teach away” from the presently claimed invention. In this respect, applicant first argues that the Gordon et al. reference “discloses the single pot synthesis of small molecules employing building blocks of approximately 150 dalton molecular weight ... which represents the classic approach to the combinatorial synthesis of small compounds in a single vessel to create libraries to be analyzed by simple biological procedures to fish out lead compounds from the many species present in such single pot libraries”.

This argument is not convincing for several reasons.

First, even if applicant’s argument were agreed upon by the Examiner (which it is not), applicant has overlooked the fact that the claims are drawn to a product-by-process claims. Accordingly, the Examiner would argue that a single pot process would result in “A copolymer library of different copolymers” within the scope of the presently claimed invention, irrespective of whether the syntheses occurred in a single vessel or different vessels since the references (e.g. the Kohn patent references) polymerize monomer units within the scope of the presently claimed invention.

Secondly, applicant’s interpretation of the Gordon et al. reference appears to be misguided in several respects. The Gordon et al. reference, taken as a whole, suggests the applicability of “Combinatorial Technologies” to drug discovery without limitation of the strategy employed. The Examiner has not been able to locate a Gordon reference teaching that suggests only the use of a “single vessel” combinatorial syntheses to the exclusion of the parallel techniques. In fact the

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Gordon et al. reference appears to strongly *teach toward* performing parallel/simultaneous array (e.g. separate reaction vessels) syntheses. E.g. see pages 1391-1393 (e.g. page 1392, left column, first line e.g. “on a solid support in an **array format**”. Additionally, the author’s biography (on the first page of the article, left column) describes one of the authors as “Stephen P.A. Fodor” who together with his colleagues “led the development of new technologies, *merging photolithography with combinatorial solid-phase chemistry*. As recognized by those of ordinary skill in the art, the Fodor et al. (E.g. from Affymetrix) photolithography/solid phase chemistry technique is a parallel syntheses technique **in an array format**.

Thirdly, in response to applicant's arguments against the Gordon et al. reference individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208

USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In this respect, the Still reference teaches that combinatorial syntheses can be performed, as a matter of design choice, in either one vessel, or separate vessels (e.g. array format).

Turning to the Still et al. reference, applicant argues that “Still et al. excludes polymers ... but instead is directed to “oligomers and synthetic non-repetitive organic molecules”.

Applicant’s interpretation of the Still et al. reference teaching is misguided since the Abstract clearly teaches that the Still et al. combinatorial method addresses “synthetic schemes” in which “*Various products* can be produced” ... *such as* oligomers and synthetic non-repetitive organic molecules. E.g see Still et al. Abstract.

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Accordingly, applicant's argument is misguided since the Still et al. combinatorial scheme addresses "Various products" and thus is not limited to any particular structure. Further, it would appear that the term "oligomer" would encompass the condensation of different monomer units as in the presently claimed invention. Thirdly, in response to applicant's arguments against the Still et al. reference individually, it is again noted that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this respect it is again further noted that the Still reference applies to the combinatorial syntheses of "Various products" in general, including oligomers, which should encompass combinatorial syntheses of polymers (e.g. via monomeric units) as presently claimed. Additionally, the Still reference teaches that combinatorial syntheses can be performed, as a matter of design choice, in either one vessel, or separate vessels (e.g. array format).

Applicant in the future is encouraged to more specifically cite the portion of the article being referred to in argument(s) presented to the Examiner in order to facilitate the ability of the Examiner to address his/her concerns.

Thus, the above obviousness rejections, as modified, is hereby retained.

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New Objection (s) and/or Rejection (s)

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3, 5, 9, 10, 14, 17-18, 20, 21, 23, 24, 26 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Fiordeliso et al. J.Biomater. Sci. Polymer Edn. Vol. 5, No. 6 pages 497-510 (1994)..

Fiordeliso et al. disclose five *separately (co) polymerized* (E.g. condensed, in liquid solution) polyarylates which were synthesized from "homologous" "diacid" monomer component and a "homologous" diphenol monomer components (e.g. see Figures 1 and 2). It is noted that the reference teaching of a "library" (e.g. a collection) of five distinct polyarylates copolymers regardless of the means of syntheses (separately or otherwise) meets the presently claimed product-by-process claims since this type of claim is viewed by the PTO as a product claim.

In any event the reference does teach the use of method steps within the scope of the presently claimed invention. Further, the reference teaches that the polyarylates can be "further modified" by "chemical reactions" since the polymers "degraded" (e.g. underwent a "chemical reaction") under physiological conditions (e.g. see Abstract); thus meeting present claims 9 and 27.

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9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

General information regarding further correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Celsa whose telephone number is (703) 305-7556.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jyothsna Venkat (art unit 1627), can be reached at (703)308-0570.

Any inquiry of a general nature, or relating to the status of this application, should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Bennett Celsa (art unit 1627)

October 26, 2001

BENNETT CELSA
PRIMARY EXAMINER


